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Who Will Grow Soybeans?

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Who Will Grow SOYBEANS?

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WHEN WE GET caught up on our oil and fat needs, will the soybean acreage go down in Iowa? The answer probably is yes. But no one knows for sure just how much Iowa farmers will cut down on beans and increase the acreage of corn or some other crop.

If farmers find it profitable to grow fewer acres of soybeans, where will they grow them? To help get an answer to this question, the Iowa Agricultural Experiment Station has been studying the yields by counties. This survey shows where bean yields are high and where they are low. We have studied this especially from the standpoint of the yield of soybeans as compared to corn.

From this study, it looks as if the northern tier of counties in Iowa may make the greatest reduction in soybeans. This is not because of the soil, but in part because we seem to have done a better job of producing hybrid corn strains that yield well in this area than we have of finding soybean varieties that are suited. The seasons are too cool and too short for highest yielding varieties.

Many Iowa farmers who have been growing soybeans may continue but will probably cut their acreage. In a few counties farmers may find it profitable to grow more beans.

War Gave Beans Push

In the past six seasons soybeans have been a major cash crop in Iowa. This happened partly because the government insured soybean prices. Farmers were induced to plant a certain acreage of beans as a "war crop." We have learned much about this crop. At first many viewed soybeans with some suspicion. The crop was said to be "hard" on the land. It was said to cause serious erosion. These fears have not been realized. We've found soybeans do not make excessive demands on the land. If we grow them on the contour and use cover crops, then erosion has not been any more serious with soybeans than corn. At least this was the case in our last 2 years of tests at the Clarinda Experimental Farm.

For 4 years the soybean acreage has averaged nearly 2 million in Iowa. (See table 1.) In general, soybeans have gone on corn ground either by lengthening the rotation or in place of corn. They usually haven't been planted on the more sloping land. In the peak year of 1944, Iowa farmers grew about 5 acres of corn for each acre of soybeans. In 1946 we grew over 7 acres of corn for each acre of beans.

TABLE 1. TOTAL SOYBEAN ACREAGE IN IOWA (THOUSAND ACRES)

Year	Soybeans grown alone for beans and hay
1938	912
1939	1,289
1940	1,431
1941	1,239
1942	1,943
1943	2,102
1944	2,025
1945	1,995
1946*	1,290

*Estimated on July 1

Who Grew the Beans?

North-central Iowa grows the bulk of the beans. Perhaps the densest producing area has been in Webster and Calhoun counties (fig. 1). Here in 1944 there was 1 acre of beans for every 2.75 acres of corn. In the remainder of the north-central area the soybean density in relation to corn was not so great (table 2).

TABLE 2. NUMBER OF ACRES OF SOYBEANS FOR EACH ACRE OF CORN IN HIGH SOYBEAN PRODUCING COUNTIES, 1944.

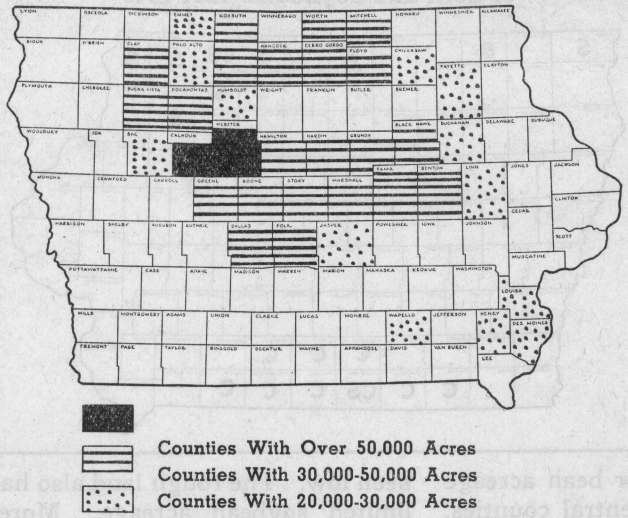
	Acres of corn for 1 acre soybeans
North-central area	
Counties with over 50,000 acres of soybeans*	2.7
Counties with 30,000-50,000 acres of soybeans	3.5
Counties with 20,000-30,000 acres of soybeans	4.9
Southeastern area	
Counties with over 20,000 acres of soybeans	2.7

*Kossuth excepted because of size

Four counties in southeastern Iowa grew 91,000 acres of soybeans in 1944. These counties had 2.7 acres of corn for each acre of soybeans. This ratio is as high as in Calhoun and Webster counties. Everywhere else in Iowa the farm-

World War II spurted soybean growing in Iowa. Now it may decline.

Fig. 1. Counties With Most Soybeans in 1944



ers grew more corn in proportion to soybeans.

This distribution of soybean acreage was unnatural in that it was not entirely by free choice of the farmer. The probable cash return per acre from the crop was not the only basis for deciding whether to grow beans.

The government price program for corn and soybeans for the past few years has probably been somewhat to the disadvantage of beans.

The demand for both corn and beans is likely to remain strong for some time. When the critical shortage of oils and fats is overcome, soybean prices may drop enough to cut the acreage.

Decide on Price, Yield

Where should we cut down on soybeans when the time comes? Should every farmer now growing beans just grow fewer beans; should we reduce more in some areas than others, or should farmers in counties that now have only a few acres drop the crop? A part of our decision rests on the relative price and yields we can expect from corn and soybeans.

In the past 5 seasons the average Iowa farmer got 3.6 bushels of beans for each 10 bushels of corn. If we break this down by seasons and counties, however, we find that the spread is considerable.

In some counties you can expect to get well over 4 bushels of soybeans for every 10 bushels of corn. In other counties you can expect only 2.7 and 2.8 bushels of beans for each 10 bushels of corn.

This means that if you have a 40-acre field of 50-bushel corn land, there is one county (Henry) in which you could expect to get 860 bushels of soybeans (21½ bushels per acre) from the 40 acres. In another county (Shelby) you might expect only 540 bushels of soybeans (13½ bushels to the acre). It will be profitable to grow soybeans mainly where the yields are high and high also with respect to corn.

High and low yields of corn and high and low yields of soybeans do not necessarily go together. Our survey of the average yields of the two crops by counties for the past 5 seasons shows this. Figure 2 shows that the high soybean yielding counties are in southeast and east central Iowa. These are not always the high corn yielding counties. Some of the best corn counties are a little farther north.

Now the low-yielding counties are distributed quite differently (fig. 3). Low soybean yields in general have been obtained in the counties bordering Minnesota and especially in the northeastern corner of the state. We get our lowest corn yields, on the other hand, in the southern Iowa counties along the Missouri line except for the southeast and southwest corners of the state.

Where Do Beans Fit?

Why are these high and low yielding areas distributed so differently? Apparently the soybean varieties we grow are not as well suited to the state as a whole as our corn hybrids. Iowa is on the northern edge of the area where you may profitably grow soybeans for the beans. Our northern Iowa soils in general are suitable for soybeans, but yields are low. Temperatures are too low and seasons too short.

In southern Iowa where the soils as a whole are less productive than those in northern Iowa, soybeans do better. The growing season is longer and the weather warmer. That's why the better soils of southeastern Iowa generally produce our best soybean yields.

In Des Moines, Henry, Louisa, Washington and Keokuk counties, the average soybean yield for the past 5 seasons has been 22.6 bushels to the acre. This is 21 percent above the state average. In the same counties the corn yield has been 54.8 bushels, only 5 percent above the state average. In these counties farmers have averaged over 4 bushels of beans for 10 bushels of corn on the basis of yield per acre.

In Tama, Grundy and Marshall counties where soybean yields also are high, soybeans do not make as good a showing in relation to corn yields. That's mostly because these are top corn-yielding counties, too. The average soybean yield for the same 5-year period has been 22.5 bushels, and the corn yield 61.8 bushels. The corn yield is 18 percent above the state average. If you farm in this area then, you can expect only 3.6 bushels of beans for every 10 bushels of corn.

In Webster and Calhoun counties where the soybean acreage has been so high, the yield relationship is almost the same. Soybean and corn yields are lower in these two counties than in Tama, Grundy and Marshall, but they are lower in about the same proportion. Webster and Calhoun are about 6 percent above the state average.

In the Iowa map (fig. 4) you will find what the yield of soybeans has been for each 10 bushels of corn. This relationship is for all corn. It would be better if we could compare corn and soybeans at the same place in the rotation. But usually soybeans compete with our second- or even third-year corn.

If we could figure these yields before corn has sapped the fertility ahead of soybeans, then bean yields would be higher in relation to corn.

At any one location both soybeans and corn respond about the

Fig. 2. Ten High Counties in Yields of Corn and Soybeans, 1941-1945

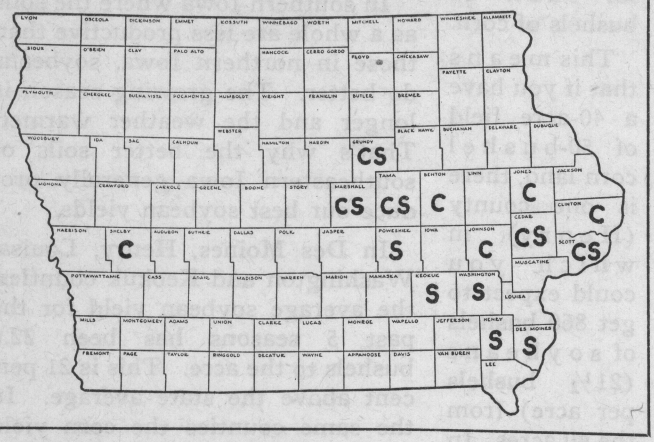
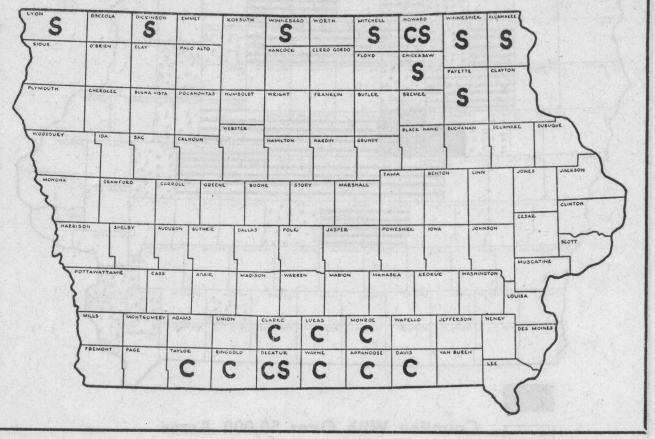


Fig. 3. Ten Counties With Lowest Acre Yields of Corn and Soybeans, 1941-1945



same to fertility differences. Also good corn weather is usually good bean weather.

In general, if your corn yields are much above or below the county average you may expect your soybean yield to be almost proportionately higher or lower than average. But there are some exceptions. Abnormal conditions may affect the two crops differently. Examples of these might be "alkali spots," or claypan.

Low Bean Counties

The figures on the map (fig. 4) and a knowledge of county corn yields suggest where the most acres of soybeans are likely to be grown in comparison with corn.

Until we have higher-yielding varieties for northern Iowa, farmers in the tier of counties bordering Minnesota should not grow many beans. The five counties in the northeast corner of the state especially have not done well with beans. Also, in the western counties along the Missouri Valley soybean yields generally have not been high. They do not yield well there as compared with corn. When weather has been drouthy, some of these western counties have had very low yields.

Farmers with certain fine-textured soils, for example those on the Missouri bottom in Monona County, may want to continue to grow some beans even if the yields are low. This is because beans improve the physical condition of these soils.

Predicting the Trend

North-central Iowa farmers in the second tier of counties may want to reduce their bean acreage more than in the central counties. If the state acreage is in the neighborhood of 1 million or above, then the bulk of the beans will still have to be produced in the north-central and east-central areas.

Those of you in southeastern counties may not need to cut your acreage. Here the yields have always been high, and the yields high in relation to corn. In one or two south-central Iowa counties, notably Madison and Warren, soybean yields have been good compared to corn, and the bean yields have at least equaled the state average. On the level land in these counties, some of you might find it profitable to grow more beans.

In the south-central Iowa counties along the Missouri line and in the next tier, yields generally have been low. The rough land also has limited soybean acreage. Moreover, farmers in this area do not produce as much feed grain as they need. So they plant corn when possible. The yield of soybeans is high enough compared to corn that in most of these counties, the cash returns will keep farmers growing about the same bean acreage. Soybeans may even increase because much of the land is limed.

Our opinion on what various parts of Iowa will do with soybeans is based on producing a crop half as large as during the peak of war plantings. In any event, if you study the map (fig. 4) you will know about what yield you can expect from soybeans as compared to corn. This should help you decide whether to stick with beans, drop them or increase them.

Fig. 4. Average Yield of Soybeans for Each 10 Bushels of Corn by Counties, 1941-1945. (State Average—3.6.)